Space Weather Forecast

Issued on Wednesday, 29 March 2023 at 00:15 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of reaching G1/Minor Storm from late Day 2 (30th) into Days 3 and 4 (31st March and 1st April).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours, with occasional minor common class flares recorded at GOES16. There are now seven numbered sunspots on the visible disc. A moderately large region in the southwest remains the largest and most magnetically complex group, continuing to evolve in the trailer portion. Two groups located in the northwest quadrant, have also shown some growth within their intermediate spot regions. However, the other active regions appear stable and magnetically simple, with only minor fluctuations in areal extent.

No Earth-directed coronal mass ejections (CMEs) were observed in available coronagraph imagery.

Solar Wind / Geomagnetic Activity: The solar wind was mostly at background levels. The interplanetary magnetic field was weak over the 24 hours, with the north-south component varying weakly, although often south orientated. The net result of the above solar wind measures was for Quiet (Kp 0-2) geomagnetic activity.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is most likely to remain Low, but with a chance of becoming Moderate with any isolated Moderate-class X-ray flares. The main region likely to give such flares is the largest and most complex in the southwest.

Solar Wind / Geomagnetic Activity: No Earth-directed coronal mass ejections (CMEs) currently feature in the forecast. Solar winds are expected to remain at background levels until the next coronal hole 88 becomes geoeffective, possibly arriving late on day 2 (30th), and continuing into days 3 and 4 (31st March and 1st April). Geomagnetic activity will initially be mostly Quiet (Kp 0-2) with the slight chance of an Unsettled interval (Kp 3) during day 1 (29th) and into day 2 (30th). Later on day 2 (30th) and more especially into days 3 and 4 (31st March to 1st April), we are likely to see the arrival of the fast wind from coronal hole 88. Geomagnetic activity is likely to increase to Unsettled (Kp 3) with Active (Kp 4) intervals with a Chance of G1/Minor geomagnetic storms (Kp 5).

Energetic Particles / Solar Radiation: No solar radiation storms are expected, but there remains a slight chance of reaching S1 or greater, should any significant flares occur.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	30	40	40
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	30	30	30
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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